

Advanced Communication Riser



Agenda

- ◆ **ACR Special Interest Group- Introduction**
 - **Richard Baek**
- ◆ **ACR Standard Here and Now**
 - **M. Consuelo Ortiz**



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ACR Special Interest Group

Richard Baek
ACR SIG - Managing Director



San Jose January 23-24, 2001 - Taipei February 14-15, 2001

Agenda

- ◆ **ACR SIG Overview**
 - **Charter and focus**
 - **Membership Benefits**
- ◆ **Momentum Behind ACR SIG**
- ◆ **ACR SIG Commitment to Success**
- ◆ **Summary**



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ACR SIG Overview

- ◆ **An open industry non-profit corporation**
- ◆ **Membership levels include Promoters, Participants, and Adopters**
- ◆ **Chartered to develop and accelerate industry wide adoption of a common architecture for an open specification for advanced PC communication riser card**
 - **Analog modem**
 - **Networking: Ethernet, wireless, and phone-line, etc.**
 - **DSL**
 - **Audio functions**



ACR SIG Overview (con't)

- ◆ **Immediately available solution for scalable standard interface that enables WAN/LAN**
- ◆ **Features include:**
 - **Backward compatible with legacy AMR (Audio Modem Riser) cards**
 - **Increased flexibility for product differentiation and integration**
 - **New bus structure increases flexibility, longevity and future enhancements potential**



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Membership Benefits

- ◆ Participate in spec development (Promoter/Participants)
- ◆ Automatic timely access to ACR specifications
- ◆ Access to members only (Participants/Adopters) web site areas
- ◆ Email updates on ACR developments
- ◆ ACR SIG exclusive event participation
 - I.e. Taiwan Plugfest and Technical Training
- ◆ Marketing programs



Momentum Behind ACR SIG



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ACR SIG Members

- ◆ 3Com
- ◆ Acer Laboratories Inc. (ALi)
- ◆ Agere Systems (formerly Lucent Technologies)
- ◆ Alcatel
- ◆ Allayer Communications
- ◆ AMD
- ◆ Analog Devices, Inc.
- ◆ Aopen Inc.
- ◆ ArchTek Telecom Corporation
- ◆ Askey Computer Corporation
- ◆ ASUSTeK Computer Inc.
- ◆ Avance Logic, Inc.
- ◆ Biostar Microtech Int'l Corporation
- ◆ CastleNet Technology Inc.
- ◆ Chaintech Computer Co., Ltd.
- ◆ Clare
- ◆ Cologne Chip AG
- ◆ Conexant
- ◆ DFI
- ◆ D-Link Corporation
- ◆ EFA Corporation
- ◆ EliteGroup Computer Systems
- ◆ ESS Technology, Inc.
- ◆ First International Computer Inc. (FIC)
- ◆ FMMO Inc.
- ◆ Gigabyte Technology Co., Ltd.
- ◆ Hsing Tech.
- ◆ IC Ensemble, Inc.



ACR SIG Members (con't)

- ◆ Insyde Software Corp.
- ◆ Integrated Circuit Systems
- ◆ Iwill Corporation
- ◆ KC Technology, Inc.
- ◆ Lectron Co. Ltd.
- ◆ Matrox Graphics Inc.
- ◆ MicroStar, Inc. (MSI)
- ◆ Motorola
- ◆ NuVision Technology, Inc.
- ◆ nVIDIA Corporation
- ◆ Ocean Manufacturing, Inc.
- ◆ PCTEL, Inc.
- ◆ Phoenix Technologies, Ltd.
- ◆ Quanta Computer
- ◆ SigmaTel, Inc.
- ◆ Silicon Integrated Systems (SiS)
- ◆ Smart Link Ltd.
- ◆ Sota
- ◆ Standard Microsystems Corp. (SMSC)
- ◆ TECHGEN Inc.
- ◆ Texas Instruments (TI)
- ◆ T-Square Design, Inc.
- ◆ TurboComm Tech. Inc.
- ◆ VIA Technologies
- ◆ Well Communication Corp.
- ◆ Wolfson Microelectronics Ltd.
- ◆ Xware Corp., Inc.



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ACR SIG Building Momentum

- ◆ **1.0 Specification under membership review**
- ◆ **Motherboard products/designs available:**
 - VIA - VT5365, PLE133 (VT8601 + VT8231), VT5274, KT133 (VT8363 + VT8231) VT5347, PRO266 DDR (VT8633 + VT8233)
 - Chaintech - 6VJD2, PRO266 DDR (VT8633 + VT8233)
 - SiS - 730S
- ◆ **Riser Card products/designs available:**
 - AMD – CCR, CCR-U, CCR-E, CCR-H
 - Conexant – Smart AMC, Smart MC
 - PCTEL – Communication Combo Card
 - Smart Link – Smart Riser 56 – ACR
 - Well Communication Corp. – Communications Combo Card



ACR Riser Card Types

- ◆ **ACR.Basic** ACLink, USB, and ACR Serial
- ◆ **ACR.Lite** MII (1), ACLink, USB, and ACR Serial
- ◆ **ACR.Hub** MII (1), ACLink, USB, ACR Serial, and MII (2)
- ◆ **ACR.Plus** MII (1), ACLink, USB, ACR Serial, and IPB
- ◆ **ACR.Extreme** MII (1), ACLink, IPB, USB, ACR Serial, and MII (2)
- ◆ **ACR.RFX** MII (1), ACLink, USB, ACR Serial, IPB, and Wireless



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ACR SIG Commitment to Success



ACR SIG Commitment

- ◆ **Mobilization of Vital Technical Marketing, Inc.**
 - Operations Management
 - Marketing and Event Management
 - Member Communications
- ◆ **Worldwide industry enablement**
 - ACR Plugfest (Domestic and International) – February 12 and 13, 2001
 - Technical training - February 12, 2001
 - ACR self-testing Designed for Windows Logo program
- ◆ **Evangelism**
 - Platform Conferences, System Builders Summit, Cebit, WinHEC, Computex, Comdex, Strategy 2001, etc.



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ACR Presentations

- ◆ ACR Standard - Here and Now (Consuelo Ortiz / AMD)
- ◆ ACR Enumeration (Terry Cole / AMD)
- ◆ IPB Architecture and Uses
 - *Supporting Broadband Connectivity - the Integrated Packet Bus (IPB)* (Author: Steven E. Strauss / Agere Systems, formerly Lucent Technologies)
 - *Broadband, Wireless, beyond the Integrated Packet Bus (IPB)* (Author: Conrad A. Maxwell / Conexant)
- ◆ ACR – A Flexible and Inexpensive Alternative to Multiple PCI Cards (Leor Brenman / Smart Link)
- ◆ Core-logic Integration and ACR Application (Eric Yu / PCTEL and Benjamin Pan / VIA Technologies)



ACR Summary

- ◆ Open specification for advanced PC communication riser card
- ◆ Worldwide industry momentum building rapidly around ACR
- ◆ ACR SIG is firmly committed to successful enablement of our technologies



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Contacting ACR SIG

**ACR Special Interest Group
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Portland, OR 97221 U.S.A.
Tel. 503-291-2566, Fax 503-297-1090
www.acrsig.org**

*Please stop for an informational package at
our exhibit booth #17 in San Jose, CA or booth #18 in Taipei, Taiwan*



The ACR standard here and now

**M. Consuelo Ortiz
Advanced Architectures Lab
Business Development
AMD**

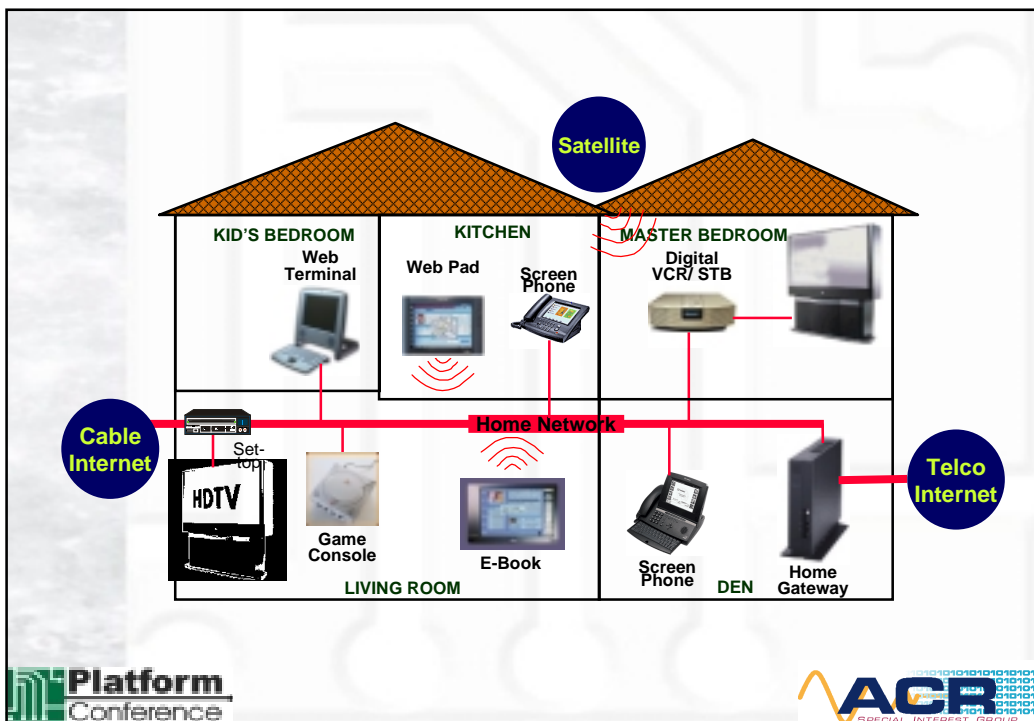


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Agenda

- ◆ The ACR Initiative
- ◆ ACR Status
 - Chipsets
 - Motherboards
 - Riser Cards



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System Trends

◆ Highly Integrated Silicon

- Fewer chips with more functions
 - For example, integrated graphics, audio and Comm
- Lower costs needed to make PCs ubiquitous

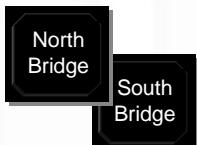
◆ More multimedia and communications

- Good graphics and audio are no longer luxuries for commercial systems, but requirements
- LAN, cable modem, DSL and wireless technologies are linking all PCs together

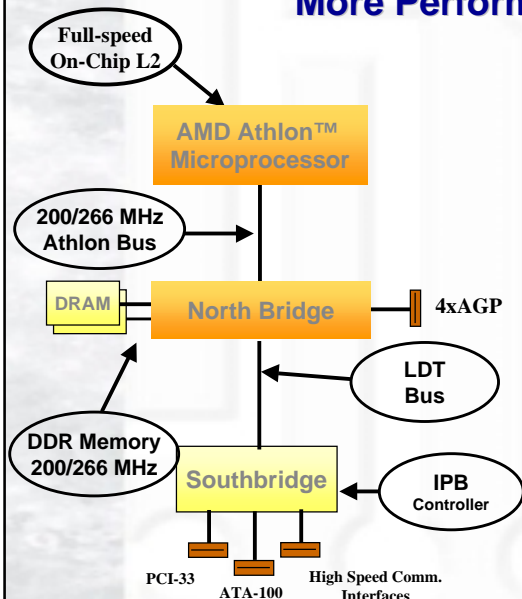
◆ All driving the need for much faster, low latency, universal interconnect in the box

◆ Connectivity outside the box: WAN & LAN

- AMD Athlon™
- Integrated SMA 3D Graphics
- AGP 4X interface
- PC100 and PC133 Memory
- Dual Bus Mastering IDE
- AC-97
- Ethernet Interface
- Super I/O
- USB ports



AMD Athlon™ Platform More Performance Ahead



AMD Athlon On-Chip full-speed L2 caches Up to 2 MB on-chip full-speed L2 cache Clock Speed, Clock Speed, Clock Speed
266MHz Front-Side Bus (FSB) AMD will debut a 266MHz FSB in 2000; increasing the bandwidth of our industry leading 200MHz bus by 33%
PC2100 & PC1600 DDR Memory Lowest latency and highest bandwidth (to 2.1 GB/sec) PC memory
Lighting Data Transport™ (LDT) Provides bandwidth and isosynchronous capability for next generation I/O integration
Multi-Processor True multiprocessor chipset with a dedicated 266MHz Athlon bus per processor IGD4 (2-way) scheduled for 2H'00.
Advanced Communication Riser Common architecture for analog modem, Ethernet, phoneline and wireless networking, DSL, and audio functions

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The Need for a New Riser

- ◆ To reduce communications peripheral development costs
- ◆ To answer demand for emerging and new communications technologies
 - Accommodates the communications technology advances while mitigating the impacts of a standards change
- ◆ To allow multiple generations of core logic, peripheral components, and software emulators to implement a specification without frequent motherboard architecture changes

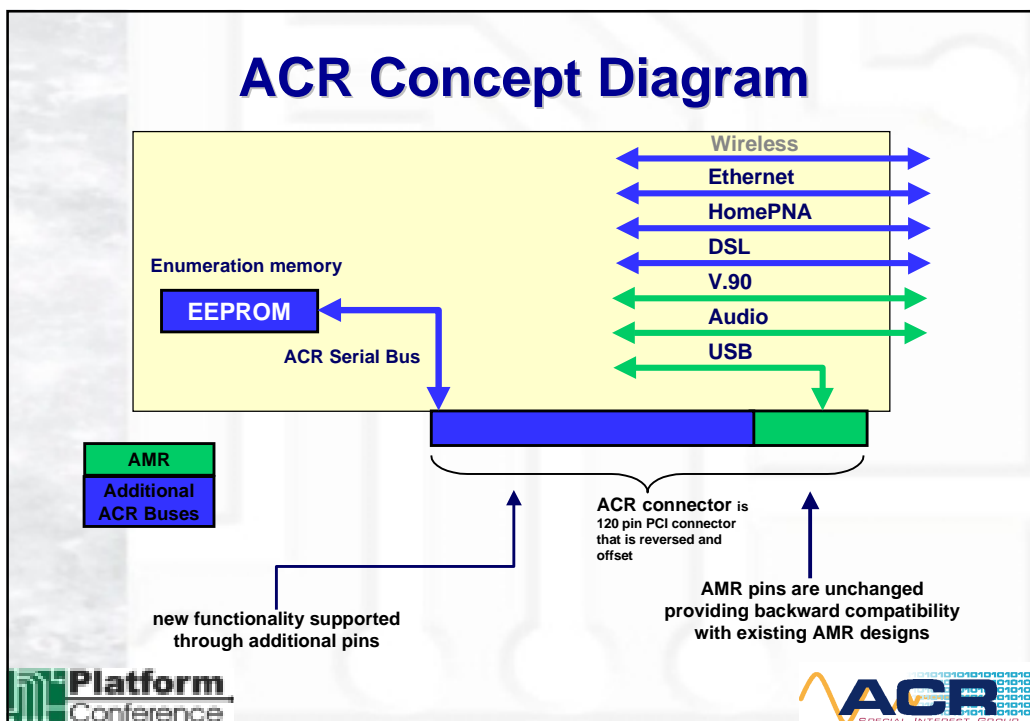


ACR Strategy

- ◆ Support an architectures that serve different market segments
- ◆ Improve on PCI solutions
- ◆ Enable reductions in size and cost
- ◆ Enable soft and semi-soft solutions
- ◆ Ease logo certification



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ACR is an Evolutionary Upgrade

- ◆ **Backward compatible with AMR**
 - Supports legacy AMR riser designs for modem and audio Codecs
 - AMR cards plug into the ACR slot and work without modification
- ◆ **Eliminates enumeration and Plug-n-Play challenges**
 - With the addition of EEPROM/PROM and new signals
 - Existing AMR designs can be easily modified to take advantage of these new capabilities

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ACR Interfaces

- ◆ **ACR is based on exiting technologies**
 - **AC'97**
 - Supports audio and or modem functions
 - **MII Interfaces**
 - Supports one of two LAN interfaces
 - **IPB**
 - Broadband connectivity
 - **USB**
- ◆ **ACR.Basic, ACR.Lite and ACR.Hub are buildable today**
 - In addition chipset vendors are sampling solutions that include an integrated LAN/WAN controllers



Improved Enumeration

- ◆ **Improved enumeration using serial EPROM**
 - Speeds WHQL acceptance
 - An ACR riser card can be self tested independent of the motherboard
- ◆ **Working very close with Microsoft WHQL team**
 - Joint development of test assertions and ACR HCTs



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Single Motherboard

- ◆ **Single motherboard design can be used in multiple SKUs**
 - **This protects the investment in motherboard design and layout**
 - Changes to motherboard designs to provide new functionality can be risky
 - **Greater economies of scale can be achieved**
 - Same connector as PCI
 - Same motherboard supplies multiple SKUs



Diverse and scalable

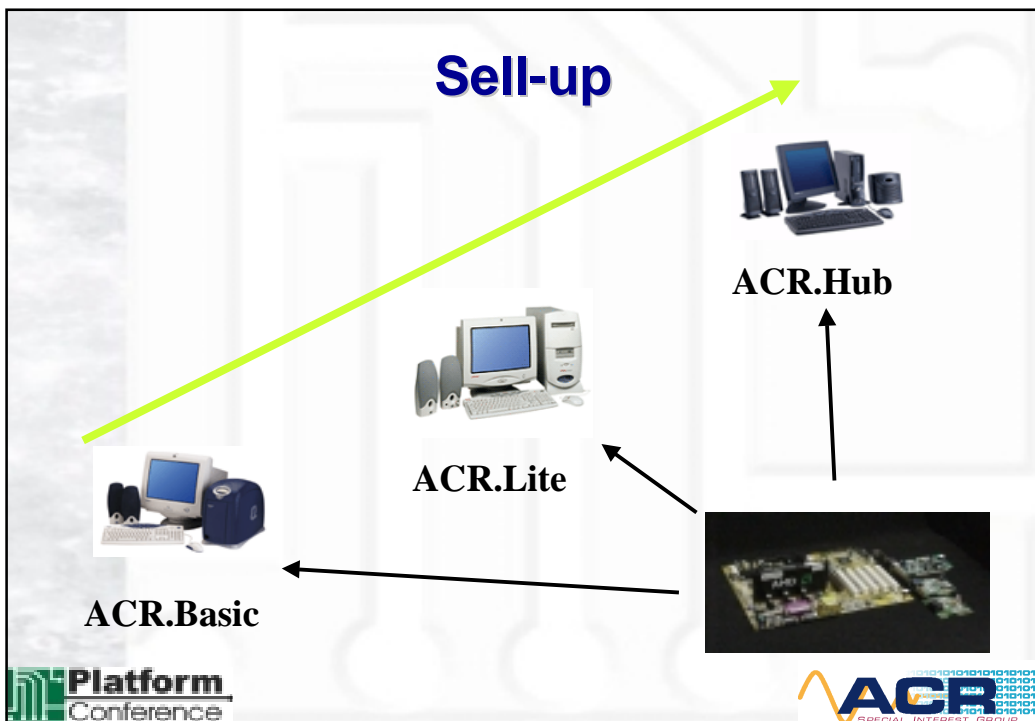
- ◆ **Configure To Order (CTO) and Build to Order (BTO) WAN/LANS**
 - **Allows diverse and scalable communications, networking and audio functions in a flexible combination of hardware and software cores**
 - **The ACR cards define the platform's WAN/LAN capability at the factory**
 - As many or as few technologies as appropriate
 - Several hard/soft partitions of solutions to provide maximum flexibility with one architecture



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Some ACR Configurations

- ◆ **ACR Basic**
 - USB, AC97, SMBus
- ◆ **ACR Lite**
 - USB, AC97, SMBus, Integrated MAC w/ MII or GPSI
- ◆ **ACR Hub**
 - USB, AC97, SMBus, (2x) Integrated MAC w/ MII or GPSI



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Other Advantages

- ◆ **Riser combo functionality frees up PCI slots**
 - **A Communication device will use at least on PCI slot**
 - If you commit one slot to a communication solution then ACR offers and advantage
 - Enables multiple network connectivity with a single card
 - **With ACR.Lite you can implement a home Gateway solution now**



ACR Status

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Where is ACR today

- ◆ **Standard is ready**
 - Specification 1.0 available to members
- ◆ **First WHQL Approval**
 - Smart Link - Data Fax Modem logo
 - In the pipeline
 - Conexant, Lucent, PCTEL, and Sigmatel
- ◆ **Integrated Packet Bus (IPB)**
 - IPB Controller under development
- ◆ **Industry support**



ACR WHQL Logo Program

- ◆ **Plan was defined as a sequence of four steps**
 - Step 1: Establish processes for an ACR capable system logo and an ACR device logo. In this step the MB and devices will be logo'd as a combination
 - Step 2: Establish a small set of reference ACR motherboards and tests for ACR device vendors
 - Step 3: Establish a set of reference ACR devices and tests for ACR motherboard vendors
 - Step 4: Self-testing by all ACR vendors
- ◆ **Step 1 is completed**
- ◆ **Step 2 in process**



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WHQL Work

- ◆ **Microsoft & ACR SIG are working together**
 - **Developing test assertions and HCTs**
- ◆ **First ACR hardware was submitted to WHQL**
 - **Using existing HCTs to test that hardware**
 - Audio, Net, and Modem HCTs for example
 - **Adding tests for ACR specific functionality to HCTs**
- ◆ **Smart Link has received the first Data Fax Modem certified for Windows logo**
- ◆ **Long-range plan for enabling self-testing**



Minimum System Requirements

- ◆ **Motherboard Controllers**
 - **DC 97**
 - **USB**
 - **ACR Serial Bus (SMBus)**
- ◆ **Riser Devices**
 - **EEPROM**



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Chipsets

Chipset / Vendor	ACR Basic	ACR Lite	ACR Hub
ALi 1535+	✓		
ALi 1535D+	✓		
SiS 635	✓	✓	
SiS 730S	✓	✓	
VIA 8231	✓	✓	
VIA 8233	✓	✓	
VT82C686A	✓		
VT82C686B	✓		



ACR MotherBoards

Asus	Intel PIII/Celeron	VIA 8633 + 8233	ACR.Lite
Biostar	Intel PIII/Celeron	VIA 8633 + 8233	ACR.Lite
	AMD Athlon/Duron	VIA 8366 + 8233	ACR.Lite
ChainTech	Intel PIII/Celeron	VIA 8633 + 8233	ACR.lite
DFI	AMD Socket A	SIS730	ACR.lite
ECS	Intel PIII/Celeron	VIA 8633 + 8233	ACR.lite
	AMD Athlon/Duron	VIA 8366 + 8233	ACR.Lite
lwill	Intel PIII/Celeron	VIA 8633 + 8233	ACR.lite



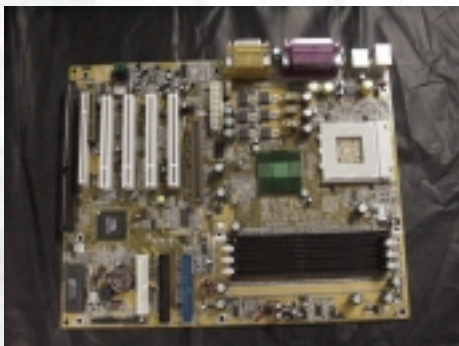
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ACR Riser Cards

- ◆ **ACR.Lite**
 - Archtek, Well Communications and SmartLink have production worthy boards and PCTEL, Motorola, and Conexant have working prototypes.
- ◆ **ACR.Basic**
 - Conexant, PCTEL, Smartlink and Sigmatel have prototypes
- ◆ **Other**
 - 10/100 and HUB prototype from AMD
 - DSL Prototype with ADI
 - 6 channel Audio prototype from Sigmatel



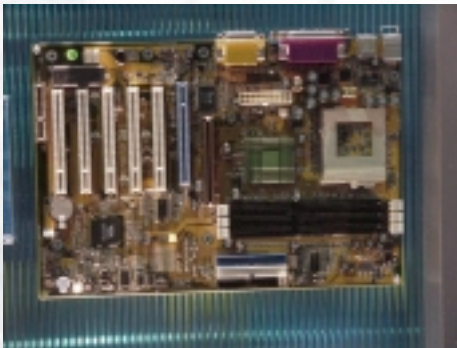
Biostar (AMD IGD4/VIA 8231)



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Chaintech

ACR / CNR, DDR, Intel Socket 370



Platform
Conference

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DFI Motherboard

SIS730, ACR, SDRAM, & AMD Socket A



Platform
Conference

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ECS

(VIA SB, ACR, DDR, Intel Socket 370)



Iwill

2-P, ACR, DDR, VIA SB, Intel Socket 370 x2



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VIA 5311B Prototype



 **Platform**
Conference

 **ACR**
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SIS Prototype



 **Platform**
Conference

 **ACR**
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AMD ACR.Hub - Prototype



 **Platform**
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ArchTek ACR.Lite: HPNA1.0 / Ethernet, V.90 & USB



 **Platform**
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 **ACR**
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ArchTek

ACR.Lite: HPNA, Ethernet, V.90 & USB



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ArchTek

ACR.HUB 10/100 Ethernet, V.90 & USB to HPNA1.0



 **Platform**
Conference

 **ACR**
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Lucent

ACR.Lite HPNA 2.0, & V.92



Platform
Conference

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PCTel ACR.Lite
HPNA 1.0, & V.90

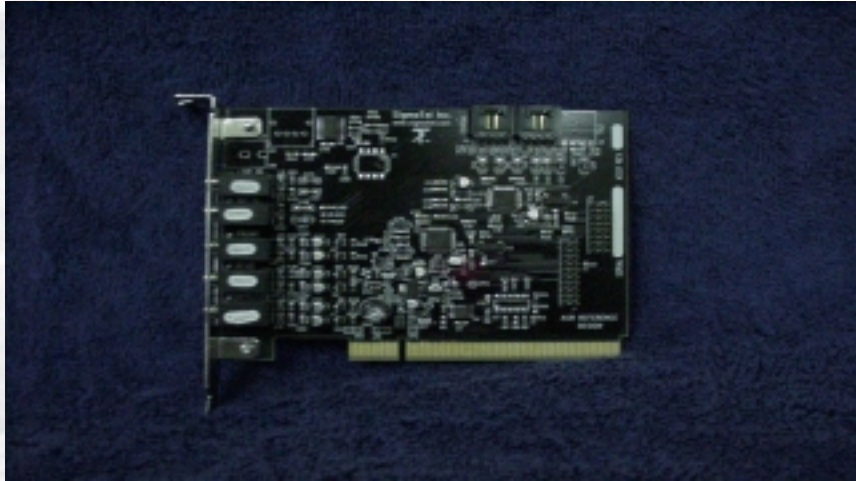


Platform
Conference

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SigmaTel 6-Channel Audio Card



 **Platform**
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 **ACR**
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SmartLink ACR.Basic V.90 and EEPROM



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Well Communications

ACR.Basic Conexant V.90 & EEPROM



 **Platform**
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Well Communications

ACR Lite Card w/ HPNA 1.0 / E'net & SmartLink V.90



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Well Communications



ACR Lite Card w/ HPNA 1.0 / E'net & SmartLink V.90





Well





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Sigmatel



 **Platform**
Conference

 **ACR**
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Sigmatel 6 Channel Audio



 **Platform**
Conference

 **ACR**
SPECIAL INTEREST GROUP

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Summary

- ◆ **ACR is a key element for Communication enabled Platform**
- ◆ **ACR addresses market needs**
 - Natural migration from existing solutions
 - Supports emerging and new communications technologies
- ◆ **ACR offers scalability and flexibility**
 - Single MB supports multiple SKUs
 - Offers multiple network connectivity on a single card
- ◆ **ACR gains broad industry support**
 - Over 55 members
 - Broad support from MBs riser card and chipset vendors



Key ACR sites

- ◆ **ACR SIG**
 - www.acrsig.org
- ◆ **Microsoft WHQL**
 - acrhelp@microsoft.com
- ◆ **AMD ACR initiative**
 - www.amd.com/devconn/acr.html

